

TABLE 2.—Free-air resultant winds (meters per second) based on pilot balloon observations made near 7 a. m. (E. S. T.) during April, 1932—Continued

Altitude (meters) m. s. l.	Los Angeles, Calif. (217 meters)		Medford, Oreg. (410 meters)		Memphis, Tenn. (85 meters)		New Orleans, La. (25 meters)		Oakland, Calif. (8 meters)		Oklahoma City, Okla. (397 meters)		Omaha, Nebr. (299 meters)		Phoenix, Ariz. (356 meters)		Salt Lake City, Utah (1,294 meters)		Sault Ste. Marie, Mich. (198 meters)		Seattle, Wash. (14 meters)		Washington, D. C. (10 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
Surface.....	°		°		°		°		°		°		°		°		°		°		°		°	
500.....	309	0.2	248	0.4	161	0.5	98	0.4	342	0.8	184	1.6	104	2.0	100	2.0	170	1.6	30	1.1	172	1.2	291	1.4
1,000.....	135	0.6	268	1.0	208	3.9	173	2.1	293	2.7	191	3.2	129	2.9	128	1.4	42	2.9	196	3.0	196	3.0	294	4.4
1,500.....	331	2.0	255	1.3	238	4.7	194	2.9	307	3.6	233	5.3	176	3.4	282	2.1	14	3.2	200	3.9	293	6.3	293	6.3
2,000.....	300	2.8	214	2.8	250	4.7	207	2.2	287	3.8	255	5.3	246	3.7	263	2.3	178	2.4	345	4.8	205	4.7	295	9.7
2,500.....	297	3.4	227	4.9	268	4.9	243	1.6	276	4.5	271	5.5	271	4.8	253	3.5	203	2.2	341	7.6	209	4.9	305	12.4
3,000.....	293	3.3	230	7.0	273	7.4	303	3.0	256	5.1	270	6.8	284	5.4	231	4.4	247	2.5	332	9.8	210	5.0	301	11.5
3,500.....	283	5.2	225	8.5	274	9.5	288	3.8	260	5.4	287	5.9	292	9.9	233	6.1	267	5.0	329	9.4	207	6.0	303	11.3
4,000.....	274	7.0	223	9.9			309	7.5	286	6.1			292	13.1	255	8.0	276	7.0	306	9.6			283	12.3
5,000.....																	279	5.2	318	13.3				

WEATHER IN THE UNITED STATES

THE WEATHER ELEMENTS

By M. C. BENNETT

GENERAL SUMMARY

The temperature during April was somewhat below the normal from the middle Atlantic area and upper Ohio Valley northward and in the central and southern Plateau and Pacific regions. Elsewhere it was generally above the seasonal average, being but slightly above in the Southern States, while from northern Texas and Arkansas northward to the Canadian border it averaged from 2° to 4° above.

The month as a whole was generally drier than usual throughout the greater part of the country, except the northern Great Plains, the central Rocky Mountain States and the northern half of the Pacific area. The marked feature of the April precipitation was the receipt of generous amounts in the Northwestern States, where moisture had been deficient for a long time, some portions of Montana and the Dakotas receiving nearly 300 per cent of the average April rainfall. The central valleys, the East, and South received generally less than normal; however, heavy amounts were received in limited areas along the west Gulf coast. On the other hand a number of stations in the far Southwest received no rainfall during the entire month.

TEMPERATURE

Periods of low temperature and of high were scattered through the month, most of them being quite brief. In general, the first decade brought more warm weather than cool, and the Missouri Valley was almost constantly warmer than normal. California, the Ohio Valley, and the southern Appalachian region likewise were mainly warm, while in the southern Rocky Mountain region and several parts of the Gulf and Lake regions cool weather predominated.

The middle decade was mainly warmer than normal in the western half of the country, notably the Rocky Mountain region, the northern Plains and the southern Plateau. Low temperatures prevailed in much of the eastern half, especially the Lake region, Ohio Valley, and districts to eastward.

The first half of the last decade was mainly cool from the Rocky Mountains westward, but warm to eastward, particularly in the lower Mississippi Valley and East Gulf States. The latter half of the decade differed from

the first half chiefly between the Rocky Mountains and the Mississippi River, where cool weather set in.

In the northeastern portion of the country April resembled March, each averaging colder than normal; in California and adjoining districts a cool April followed a mild March, while in most other regions, a warm April succeeded a cold March.

April was the first month since August, 1931, to average within 4° of normal in every State. The Plains region, Montana, and parts of the lower Mississippi Valley averaged from 2° to 4° warmer than normal. Most of the far Northwest, Utah, the Rocky Mountain and Gulf States, Tennessee, Kentucky, and the upper Mississippi Valley were slightly warmer than normal.

There were small deficiencies in California, most of Nevada, and parts of States adjoining; also the South Atlantic States and the upper Ohio Valley averaged a little cooler than normal. The Lake region and the extreme Northeast averaged considerably below normal, much of New York being 3° or more below.

The highest marks were usually in the eighties in the northernmost States, the Ohio Valley, and the Middle Atlantic States, but elsewhere from 90° to 105°, the last in Arizona. As a rule they occurred during the middle decade between the Pacific coast and the Plains, and during the last decade to eastward.

The lowest readings were below zero in a few North-Central States and some States with lofty mountains; but from the middle and southern Plains eastward they were mostly between 15° and 35°. In the eastern half these lowest readings occurred usually during the first five days or else about the 13th; in the western half the dates were various, but the Rocky Mountain and the middle Plateau States recorded their coldest weather about the 7th.

PRECIPITATION

The north-central portion of the country received a large part of the April precipitation during the opening week and the northeastern portion during the first two weeks. In the far Northwest most of the month's precipitation came during the period from 13th to 22d. To many parts of the country, however, it was the final decade that brought precipitation most abundantly, notably to the Dakotas, the northern and middle Rocky Mountain States, Texas and thence eastward and north-eastward to the southern Appalachians and the lower and middle Ohio Valley.

The precipitation of April averaged less than normal in about three-fourths of the States, while in none was it

as much as an inch above normal. It was usually greater than normal in the Dakotas and thence westward to the north Pacific coast, except that northeastern Oregon and portions of adjacent States had less than normal. Much of the middle Plateau region, Colorado, northern New Mexico, and northwestern Texas had more than normal, also most of the west and middle Gulf coast districts, central and northeastern Tennessee and adjoining areas, much of Minnesota and western and northern Wisconsin, and some northern counties of New York and Vermont.

Monthly totals as great as 10 inches were attained in only a very few localities, all in California or Washington.

Arkansas was the State with greatest average deficiency, slightly over 2 inches, the average fall being almost 3 inches. Most of the middle and lower Mississippi Valley fell considerably short of normal, but not in the vicinity of the Gulf coast. Large portions of the central and southern Plains had considerable deficiencies, also central and southern California and most districts to eastward almost to the Rio Grande. Along the Mexican border there was usually no rain or almost none from southeastern California to the one hundredth meridian in Texas.

East of the Mississippi River there was a notable shortage in most of Mississippi, Alabama, western and southern Florida, southern Georgia, and eastern South Carolina, likewise in the upper Ohio Valley, southern New England, and the interior of the Middle Atlantic States, and near the middle and southern portions of Lake Michigan.

SNOWFALL

East of the one hundredth meridian the snowfall was not remarkable for April, save in a very few localities; but at Canton, N. Y., the amount was the greatest in a record extending over 35 years. Usually there was a little more than the average April snowfall at stations near the Canadian boundary from western Maine to Minnesota. As far north as Albany, N. Y., and LaCrosse, Wis., many stations escaped measurable snowfall.

In the States of the far West snowfall usually exceeded the normal, except near the Canadian border and in large parts of the Pacific States. The prospects for liberal flow next summer in streams fed by melting snow are judged to be good in nearly all the far West.

SUNSHINE AND RELATIVE HUMIDITY

Rather abundant sunshine prevailed generally during the month in almost all southern areas, and locally in the central part of the upper Lake region and central New England States. On the other hand the sunshine was deficient in the northern and central Great Plains and westward to the Pacific. Elsewhere it was generally near or slightly above the normal.

The relative humidity was above the normal in the far Northeast, the northern Great Plains, and much of the area westward therefrom to the Pacific. Elsewhere it was generally below the seasonal average, except that along the Gulf coast it was practically normal. The departures from the normal were in most cases small.

SEVERE LOCAL STORMS, APRIL, 1932

[The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the Annual Report of the Chief of Bureau]

Place	Date	Time	Width of path (yards) ¹	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Attica and Varysburg, N. Y.	2	10 p. m.				Winds	Barn destroyed; livestock killed; orchards uprooted; telephone lines blown down; considerable minor damage to buildings.	Official, U. S. Weather Bureau.
Canton, N. Y.	2-3					Sleet, glaze and wind.	Overhead wires and trees considerably damaged; electric and power lines affected.	Do.
Lepanto, Ark.	7				\$300	Severe wind.	One house demolished; 7 persons injured.	Do.
Shawnee and Wabaunsee Counties, Kans.	16				8,000	Heavy hail.	Character of damage not reported.	Do.
Denver (north), Colo.	20		50			Small tornado.	Warehouse, windows and roofs damaged; path one city block long.	Do.
Arriba, Colo.	20-21					Wind.	Much of spring grain blown out; soil badly drifted in places.	Do.
Pulaski and Massac Counties, Ill.	21	6 a. m.	1.5 mi.		4,300	Hail.	Roofs, hotbeds, and gardens damaged.	Do.
Grafton, Calif.	21	4 p. m.	1,760			do.	15 per cent of cherries and prunes ruined; apples knocked off.	Do.
Glenrock to Midwest, Wyo.	23				7,000	Glaze.	Chief damage to telephone wires.	Do.
Memphis, Tenn., and vicinity.	24	9-11 p. m.				Wind.	Trees uprooted; buildings damaged.	Do.
De Kalb, County and vicinity, Ala.	24				1,600	Hail and wind.	Some buildings damaged.	Do.
Villa Ridge, Ill.	24					Hail.	Truck gardens and glass damaged.	Do.
Birmingham, Ala.	24-25					Hail and wind.	Trees, gardens and auto tops riddled; composition roofs completely ruined.	Do.
Decker, Ind.	25				14,000	Hail.	Small animals killed; buildings, autos, gardens, and trees damaged.	Do.
Montgomery, Sumner, Monroe and Maury Counties, Tenn.	25	1:30 a. m.			42,000	Winds and possibly tornado.	Buildings damaged; trees uprooted; 3 persons injured; tornadic characteristics 4 miles north of Nashville.	Do.
Shivers, Miss.	25	6 a. m.				Tornado.	No details reported.	Do.
Oseola (near), Okla., to Ashport, Tenn.	25	9:30 a. m.	16-33		35,000	do.	5 houses demolished, several damaged; 2 cotton gins wrecked; 5 persons injured.	Do.
Locke to Rosemark, Tenn.	25	9:30-10:10 a. m.	100-300	6	100,000	do.	Livestock killed; practically all buildings in path wrecked; 28 persons injured; path 16 miles long.	Do.
Champaign, Wabash and Vermilion Counties, Ill.	25	1 p. m.	880			Hail.	Heavy damage to truck, fruit, hotbeds, and greenhouses; path 2 miles long.	Do.
Mechanicsburg, Ind.	25	P. m.			300	Tornadic wind.	Character of damage not reported.	Do.
Tobyhanna, Pa.	26	do.				Tornado.	Several small buildings wrecked, others damaged.	Do.
Nashville, Ga. (7 miles southeast).	26			3	2,000	do.	3 small buildings demolished.	Do.
San Diego County, Calif.	26					Hail.	Fruit damaged.	Do.
Cheyenne to Sherman Hill, Wyo.	27					Glaze.	Telephone and telegraph wires broken.	Do.
Magnolia, Miss.	29	10:20 a. m.				Tornado.	No details reported.	Do.
Boonesville, Miss.	29	4:30 p. m.		2		do.	do.	Do.
Pauls Valley, Okla.	30	8 a. m.	2 mi.		1,500	Hail.	Chief damage to crops.	Do.
Americus, Ga. (15 miles northwest).	30	3 p. m.				Possibly tornado.	Several farm buildings wrecked; valuable cattle killed.	Do.

¹ Mi. signifies miles instead of yards.